

PANTEX GROUND WATER MONITORING AND REPORTING PROGRAM REVIEW

**Recommendations for Improving the Site-Wide Ground Water
Monitoring and Reporting System Procedures at the Pantex Site**

Report to the Secretary Of Energy

**U.S. Department of Energy
Office of Environment, Safety and Health
Washington, D.C.
May 30, 2000**

EXECUTIVE SUMMARY

Background

The purpose of this report is to provide the Secretary of Energy with an independent review of the adequacy of the Pantex site-wide ground water monitoring and reporting system and to determine if procedures were adequately followed after the discovery in May, 1999, of trichloroethylene (TCE) in the Ogallala Aquifer. This document reflects the findings of a review team from the Office of Environment, Safety and Health. This report was shared with residents of the Pantex community as well as the management and staff of the Pantex Plant for their comment before this report was submitted in final form to the Secretary on May 5, 2000

TCE is a volatile organic compound that is used as a cleaning solvent to remove grease and similar materials from equipment. It has been used for many years by a large number of DOE facilities, as well as in other industrial and commercial operations. TCE was detected for the first time in the Ogallala Aquifer beneath the Pantex Plant in May, 1999, at a level of 8 parts per billion. The Safe Drinking Water Act Standard for TCE is 5 parts per billion. The detection of TCE was noticed by technical staff but was not flagged and reported to upper management and the public for about 9 months. The Ogallala Aquifer is the primary source of drinking water and irrigation for the citizens around the Plant as well as for a large part of Texas and other states.

Delay in Reporting Monitoring Results

In requesting this report, the Secretary expressed concern over the approximately 9 months between sampling the Ogallala Aquifer and communicating the results to plant neighbors. Pantex managers, the State of Texas, and the local community share this concern. Consequently, one of the first tasks of this EH review was to determine why the delay occurred.

The fundamental cause of the delay was not following Energy Department procedures cited in the Ogallala Ground Water Contingency Notification Plan, for responding to information about new evidence of ground water contamination. The reporting procedures followed were tied to the RCRA hazardous waste permit. These reporting and monitoring requirements were unclear regarding the need for immediate re-sampling and notification of upper management.

An exceedance of a drinking water standard should trigger an immediate and appropriate resample response. However, Pantex's response was to resample the same well the next quarter and send the results to the state, rather than to immediately resample the well to verify the level and report the results to the state and the local public. Moreover, the concentration level in excess of the drinking water standards was not highlighted in the report to the state, and instead, it was treated as a routine finding.

The 1999 calendar year monitoring data were not reviewed until March 2000, when data were being assembled for preparation of the Pantex Annual Site Environmental Report. At that time, the concentration level in excess of drinking water standards was highlighted, and site officials quickly notified state officials, nearby neighbors, and others.

Furthermore, Pantex management has since agreed to fix its reporting and management procedures by issuing standing Orders to immediately flag any detected contamination in the Ogallala Aquifer to senior management. Also, if contamination is detected, the ground water will now be resampled immediately to verify the detected levels. These Standing Orders will be incorporated into revised reporting procedures.

In addition, Pantex officials have committed to expedite the processing of ground water samples by analytical laboratories. Also they are working with the public to improve the communication process, and intend to be more active in openly communicating information in a timely manner.

Summary Conclusions

1. Results of our investigation show that the site-wide ground water monitoring is not sufficient to detect contamination in the Ogallala Aquifer. In the report that follows, we suggest recommendations that, if followed, will improve the quality of the ground water monitoring system.
2. Procedures were not adequately followed to flag exceedances of the drinking water standards. In our interviews and interactions with Pantex officials, they recognized the problems, and they have put interim measures in place to prevent this from recurring. Our report contains recommendations that will establish a more effective management and reporting system.

Organization of Report and Recommendations

Major Recommendations

EH recommends that the following actions be taken immediately:

1. Require DOE/AAO and Pantex to develop a corrective action plan to address each recommendation in this report and submit the plan to EH for review. EH should conduct a follow-up review within a year to evaluate the implementation of the corrective action plan.
2. Require the development and implementation of a site-wide ground water management program be included as one of the evaluation criteria in the RFP for the Pantex contract.

3. Direct AAO to examine the feasibility of using a geographic information system, such as the GeoTracker System, as a tool to provide easy access to ground water protection program information by the stakeholders.

The remainder of this report is organized into four sections that address site-wide issues:

1. Adequacy of the Ground Water Monitoring System
2. Internal Management Systems and Reporting Procedures
3. Draft Ogallala Impact Contingency Plan
4. External Communications

Each section contains specific recommendations, each of which should be addressed in the corrective action plan.

PANTEX GROUND WATER MONITORING AND REPORTING PROGRAM REVIEW

1. Adequacy of the Ground Water Monitoring System

Key Concerns:

1. The Ogallala aquifer monitoring wells, site-wide, do not constitute an adequate network for early detection of contamination reaching the aquifer from the perched zones, and the site-wide, ground water surveillance monitoring system at Pantex needs to be improved to constitute a fully comprehensive site-wide network as required by DOE Order 5400.1.
2. The Pantex Ground Water Protection Management Program (GWMP) plan (Mason & Hangar, May 13, 1999) and the Environmental Monitoring Plan (December 15, 1999) do not provide a sufficient basis or a description of a monitoring network designed to function as a surveillance monitoring system for the Ogallala aquifer.

Observations:

1. Pantex has concentrated its monitoring activities on the perched aquifer zones, since these are the principal areas where there is known contamination from site operations.
2. Pantex initiated a low volume micro-purge sampling method for the ground water sampling program in 1999, including Ogallala well PTX01-1003 where the TCE was detected, at the request of the Texas Natural Resources Conservation Commission (TNRCC). This change was made before the 2nd Quarter 1999 sample was taken that was analyzed at 8 ppb TCE. It is possible that the change in sampling techniques from the previous EPA approved method, which employed a standard 3 to 5 well volume purge method, was responsible for the detection of TCE at this level.
3. Pantex has set its primary goals for the design of the site-wide monitoring system as "...to ensure that the Plant is in full compliance with all applicable federal and state regulatory requirements". (DQO-027, June 12, 1997) The Environmental Monitoring Plan (December 15, 1999) notes that the monitoring system is designed to meet DOE Order (5400.1 and 5400.5) requirements, as well as all federal and state standards, but no specific surveillance monitoring network, as required by Order DOE 5400.1, is described.
4. The GWMP (May 13, 1999) plan indicates that one of the primary goals of the monitoring program is to minimize the number of wells drilled into the Ogallala formation.

The objective is to protect the Ogallala Aquifer by avoiding the creation of preferential pathways.

5. Budgets for site-wide monitoring are funded through three programs: Environmental Restoration, Environmental Monitoring, and Agreement in Principle with the State of Texas. ER funding, projected at \$835K and \$741K in FY 1999 and FY 2000, respectively, primarily pays for monitoring related to remediation of the perched aquifer.
6. Pantex is making progress improving the existing site-wide ground water monitoring system.

Assessment and Overview:

DOE Orders require that each DOE site establish a site-wide ground water surveillance monitoring network. Specifically, Order DOE 5400.1 requires that "Environmental surveillance shall be conducted to monitor the effects, if any, of DOE activities on on-site and off-site environmental and natural resources," (Chapter IV, Section 5b). Currently, Pantex monitors the perched aquifer at 75 locations, the Ogallala Aquifer at 14 locations, and also samples 5 production wells in the Ogallala.¹

The Pantex monitoring program results indicate that a wide range of chemicals, explosives, and heavy metals are present in the subsurface (perched aquifer zones and unsaturated vadose zone). Each of these classes of contaminants could migrate through the perched zones to the Ogallala aquifer. A 1994 study by the Texas Bureau of Economic Geology estimated that the perched water eventually migrates through the fine-grained zones that create the perched aquifer to the underlying Ogallala, rather than being hydrologically isolated. Although the actual pathways of migration have yet to be established, it appears that the contaminants have migrated around or through the fine-grained zone to the Ogallala aquifer. The existing network of Ogallala Aquifer monitoring wells is not extensive enough to monitor the effects of DOE activities, past and present, on the Ogallala aquifer.

EH reviewed documents indicating the number and locations of existing Ogallala aquifer monitoring wells, the frequency of sampling, the contaminants monitored for, and summaries of the results. There is no indication, however, that this Ogallala monitoring network is extensive enough to provide an early detection of contamination of the aquifer from past or present operations, or from contaminated areas of the subsurface (i.e., the perched zones). A review of the locations of existing Ogallala Aquifer monitoring wells, and a comparison of these locations to known areas of contamination ((e.g., Resource Conservation and Recovery Act (RCRA) Solid Waste Management Units, spill or release areas, various landfill areas, etc.)) leads to the

¹For comparison, Brookhaven National Laboratory, which covers approximately one third the area of Pantex, maintains a surveillance monitoring system consisting of 420 on-site and 50 off-site wells.

conclusion that little or no ground water monitoring data has been collected at certain areas to determine whether the Ogallala aquifer has been affected. At those parts of the site outside of the Burning Ground area, where the Ogallala is being monitored (10 of the 14 Ogallala monitoring wells and the 5 production wells), it is not possible to determine whether existing contaminant plumes are being detected.

Plans are currently being developed to create a more comprehensive network, as part of the Pantex site's RCRA permit requirements. This network should also be designed and implemented to meet the requirements of DOE Order 5400.1.

Design of a site-wide network for surveillance monitoring that meets the requirements of DOE Order 5400.1 should be based on an adequate understanding of the ground water flow conditions (especially local flow conditions), fundamental knowledge of the structure of the subsurface, and measurements of seasonal variation in water table elevations, rainfall and recharge rates, and flow patterns. Also, effects on the flow system of certain site operations (e.g., periodic discharge of significant quantities of waste water to a playa or an evaporation pond), or stresses on the aquifer (e.g., heavy use of ground water for irrigation during growing seasons), should be considered when designing the surveillance monitoring network. Areas of potential concern throughout the site (most of which are already identified at Pantex, as a result of CERCLA investigations and the RCRA RFI) should be ranked or prioritized, based on the potential for migration through the perched zones to the aquifer. A monitoring network can then be designed to provide maximal assurance that impacts on the Ogallala, should they occur, will be detected promptly, rather than go undetected for a long time, thereby causing greater environmental damage, exacerbating remedial measures, and posing a greater potential threat of general public exposure.

Per discussion with Pantex technical staff, the EH Team has determined that the existing Ogallala monitoring network is limited, due to limited resources and to a concern for not introducing unnecessary preferential pathways through the fine-grained zone. However, plans are being developed to enhance the existing Ogallala surveillance monitoring system based on subsurface conditions and known areas of contamination in the perched zones. Such enhancements, which will include existing ER wells, are being designed to meet the TNRCC RCRA permit requirements. The EH Team agrees that progress is being made in improving the existing site-wide monitoring system. EH supports the Pantex efforts to implement a comprehensive monitoring system.

Key to the implementation of a successful ground water surveillance monitoring network is the ability to provide information to site management on potential ground water contamination problems so that appropriate actions can be taken. Certain DOE sites have learned lessons from the consequences of not having an adequate surveillance monitoring network in place, and have taken the steps needed to upgrade or enhance the surveillance network, based on a detailed, systematic review of past site operations, and detailed investigations of local subsurface conditions. An example is Brookhaven National Laboratory (BNL), where an extensive, site-

wide surveillance monitoring system has been developed, following the discovery in January 1997 of tritium in the surficial aquifer downgradient from the High Flux Beam Reactor. Although the full surveillance network is still being enhanced, BNL has now put in place a system of monitoring for potential future impacts on the ground water, at the highest priority areas of the site, in addition to the network of wells developed for compliance with federal and state regulations and for measuring performance of active remediation.²

Recommendations

1. Pantex should design and install a network of monitoring wells that will detect contamination in the Ogallala aquifer and provide information to site managers at the earliest possible time for effective response. Such a network should augment the existing monitoring system and take advantage of wells already in place, to the extent practicable. However, the site-wide Ogallala aquifer surveillance monitoring network should be designed on the basis of subsurface conditions (structure, flow system, recharge, seasonal variability, etc.) and on an analysis and prioritization of past site activities that could affect the Ogallala in the future.
2. Pantex should maintain the goal to "minimize the number of wells drilled into the Ogallala Formation" as identified in the May 13, 1999, GWMPMP plan. Drilling of new wells into a perched contaminant plume and then through the confining strata into the Ogallala aquifer should be avoided wherever possible, in order to prevent the introduction of contamination to the Ogallala aquifer.
3. Pantex should review sampling techniques employed in Ogallala aquifer monitoring wells throughout the site to ensure that contaminants are detected in various geologic strata, should they reach the aquifer. A sampling study, which investigates the effects of using low volume micro-purge methods at discrete intervals and compares the results to fully screened, 3-5 well volume sampling methods, should be undertaken as a part of the design of the site-wide Ogallala aquifer surveillance monitoring network. The study should result in the creation of a sampling plan for each well in the network that allows sampling from discrete intervals of the aquifer, where suspected contaminants could be present.

2. For more information on how this network was developed, consult "Brookhaven National Laboratory Groundwater Monitoring Improvements Plan for FY 1998 and 1999", September 23, 1998 .

4. Pantex managers should devote sufficient resources to the task of designing the surveillance monitoring network and to the subsurface hydrogeologic investigations needed to characterize the flow system. These activities are needed to allow proper location of new surveillance monitoring wells to maximize information that they will provide and to minimize future threats to ground water quality. The cost of this task will likely be small in comparison to the costs of remediation if the network is not developed. (Cost effectiveness of ground water monitoring throughout DOE was the subject of a recent DOE Inspector General review³, which concluded that substantial savings were possible through better coordination among site programs and greater Headquarters involvement in directing complex-wide ground water monitoring programs).
5. Pantex site managers should continue to seek out the considerable expertise that exists throughout the Department in the areas of subsurface investigation and ground water monitoring network design. The national EM technical team's involvement at the direction of the Secretary has brought new information and ideas for improving monitoring and coordination. Pantex site managers should form a technical peer review team to assist in design of the surveillance monitoring network. The peer review team could provide technical input at the planning or implementation stages, and recommend innovative monitoring and subsurface characterization techniques.

2. Internal Management Systems and Reporting Procedures

Key Concerns:

1. A site-wide, integrated ground water protection management program is not authoritatively established.
2. Detection of contaminants in the Ogallala aquifer were not promptly brought to the attention of management, as a result of deficiencies in internal management and reporting procedures.

Observations:

1. Ground water management and reporting (Groundwater Program Management Action Process, an ER document) are not adequately addressed by the Site's Integrated Safety Management System (ISMS).
2. During interviews with the EH team, personnel did not fully understand the reporting requirements and procedures associated with the TCE release. Awareness of line management

³ DOE/IG-0461, Ground Water Monitoring Activities at Department of Energy Facilities, February 2000.

responsibilities for the protection of ground water appears weak.

3. Roles and responsibilities for the site-wide ground water monitoring program are not well defined, documented or communicated. In particular the differences between DP landlord functions and EM clean up functions need to be better articulated and coordinated.
4. Compliance with Order DOE 5400.1 requirements for a site-wide Ground Water Protection Management Program, which includes a site-wide surveillance monitoring network, have not been given sufficient management attention

Recommendations

1. Ground water protection should be integrated into all aspects of work through ISMS, including, work planning, resource allocation, hazard analysis and control, meeting regulatory requirements, feedback and control, and management review.
2. Site wide ground water protection and reporting requirements and roles and responsibilities should be identified and communicated to managers and workers and included in the Functions and Responsibilities Manual. Reporting thresholds or flags should be identified. The differences between DP landlord functions and EM clean up functions should be clarified. The two functions should be properly coordinated as well. Pantex management should provide awareness training so workers and managers know what is expected of them if there is evidence of an exceedance of drinking water standards, or when data indicate new or unexpected results. This includes knowing what to do and whom to notify.
3. Pantex senior management should issue a policy statement or directive emphasizing its commitment to protecting the Ogallala Aquifer and clarifying worker and line management responsibility for protecting ground water. They should widely distribute the policy statement internally and externally, and periodically re-enforce it.
4. An integrated, site-wide ground water protection management program, consistent with the requirements of DOE Order 5400.1, General Environmental Protection Program, should be established. Contracts should prescribe the applicability of DOE Order 5400.1.

3. Draft Ogallala Impact Contingency Plan

Key Concern:

The “Draft Ogallala Impact Contingency Plan” may not meet the requirements of a RCRA contingency plan as defined under 40 CFR, Part 264, Subpart D “Contingency Plan and Emergency Procedures.”

Observations:

1. Critical Elements of the Contingency Plan are poorly organized and ineffectively presented. The effectiveness of the Draft Plan as a "contingency plan" is diminished by its organization and structure. The document is written for ground water/environmental restoration professionals and would not be helpful to non-ground water professionals who need to determine what actions to take in an emergency. A large portion of the plan is comprised of technical discussions of modeling and print outs for the Ogallala aquifer, which would be of limited value in an emergency. The required elements of the contingency plan are only briefly described in one table of the document. A contingency plan should have procedures for evaluating the situation, advising site management, identifying trigger levels and appropriate actions that must be taken when a contaminant is detected above established levels; and arrangement for notifying local authorities; a list of names, addresses and phone numbers (office and home) for all persons qualified to act as a coordinator; a schedule for taking action; and a communication strategy for informing the public.
2. Procedures for reporting releases of hazardous constituents were not clarified by line management.

The fact that the detection of TCE in the Ogallala Aquifer wasn't reported in a timely manner to the appropriate regulatory agencies indicates that the procedures in the draft contingency plan were not followed. The contingency plan should clearly and in great detail include procedures for reporting detections of contaminants above established levels in the Ogallala Aquifer.

Recommendations:

The following are suggestions for improving the effectiveness of the subject plan as a contingency plan.

1. Ground water professionals and managers should be provided guidance/training (or refresher training) with respect to the notification and reporting requirements under the TNRCC RCRA permit.
2. Internal procedures for reporting such incidences as the TCE release should be clearly delineated and responsible ground water professionals and managers, as well as other appropriate managers should become thoroughly familiar with these standards.
3. To be effective, more specific information is required. Specific individuals and their phone numbers should be listed as points of contacts. A "ground water release coordinator" should be identified. Alternate contacts should also be included in the list. The document

should specifically and clearly address ground water contingency requirements. Federal, State and local emergency contacts should also be listed. Everyone must know who reports to whom in an emergency.

4. External Communications

Key Concern:

1. Pantex needs to more actively share information regarding ground water contamination with the public and to better coordinate and plan the outreach effort.

Observations:

1. Pantex has had a public communication effort in place for several years, which includes biennial meetings with landowners living adjacent to the site, quarterly meetings on the ER program, and interfacing with the Plant's Citizens Advisory Board. However, these meetings were not always well attended. Citizens expressed a desire to be heard by DOE and to have some input into the decision-making process regarding ground water.
2. Since the announcement of TCE contamination Pantex management has committed to improving communications with the public via monthly meetings.

Recommendations:

1. Pantex should continue and expand its current efforts to actively reach out to the local public through continued public meetings and the production of timely and easily understood information documents. Pantex should also make source documents and reference materials more readily available to the public. For example, documents could be placed on the Pantex web site.
2. Pantex should establish a process, or enhance current ones (such as the Citizens Advisory Board), to give citizens more opportunities to be heard by DOE and to provide input to the decision-making process.
3. Pantex should cooperatively work with local citizens and the regulators to select and implement a geographic information system, such as Geo Tracker, which would provide consistent information to the local citizens and regulators quickly and efficiently.

Attachment 1

**LIST OF SITE DOCUMENTS REVIEWED
PANTEX PLANT, AMARILLO, TEXAS**

Groundwater Monitoring/Sampling

1. Pantex Plant Burning Ground Monitoring Data Analysis Report for Second Quarter 1999 (April Through June), Pantex, DOE.
2. Pantex Plant Burning Ground Monitoring Data Analysis Report for Second Quarter 1999 (July Through September), Pantex, DOE
3. Proposed Sampling Plan Groundwater Monitoring Pantex Plant (June 3, 1999)
4. Section 4.0 Groundwater Monitoring Plan - Groundwater Protection Management Program Plan. (No Date)
5. Data Quality Objective for Onsite Monitoring Well Sampling Groundwater Monitoring Program, Pantex Plant (July 1, 1997)

Assessments

6. Final Implementation Report for Investigation of the Perched and Ogallala Aquifers, Near FM 2373, Mason & Hanger Corporation (September 1999)
7. Analysis of Findings from the First Sixteen Tiger Team Assessments. (May 1991)
8. Tiger Team Assessment of the Pantex Plant, Amarillo, Texas (February 1990)
9. Draft RCRA Facility Investigation Report for Groundwater in Zone 12 at the DOE Pantex Plant (November 1995)
10. Corrective Measures Study/Environmental Assessment for the Perched Aquifer Zone at Pantex Plant (November 1999)
11. Plant Standard (STD-0107): Independent Assessments and Self-Assessments, M&H Corporation Pantex Plant (November 10, 1999)
12. Final Environmental Impact Statement for the Continued Operation of the Pantex Plant and Associated Storage of Nuclear Weapon Components (EIS-0225, 1996)

13. Report of Groundwater Data Reporting Program Assessment (Draft), A-00-03 SCF-016-00), Mason & Hanger Corporation (No Date)
14. Summary Hydro Geologic Assessment, U.S. DOE Pantex Plant, Carson County, Texas, Bureau of Economic Geology, The University of Texas at Austin, Austin, Texas May 1995)
15. Final Corrective Action Plan and Response to Self-Assessment of the Pantex Groundwater Project, June 9, 10 and 11, 1999.

Integrated Safety Management

16. DOE Safety Performance by Site - Office of Oversight Progress Report (September 8, 1998).
17. Integrated Safety Management System Verification Report Analyses for Fiscal Years 1997-1999 (October 1999).
18. DOE Amarillo Area Office Integrated Safety Management System Description (Revision 1, March 27, 2000).

Management/Organization

19. Environmental Management Plan for Pantex Plant (December 15, 1999)
20. Policy Directive (DIR-0001): Roles and Responsibility for the Management and Operation of Pantex Plant, Mason & Hanger Corporation Pantex Plant (January 12, 2000).
21. Management Integration & Controls (MIC) Standards/Requirements Identification Document, Document No. MIC-1000 (November 9, 1999)
22. Quality Management Plan for the Pantex Plant Environmental Monitoring Program, U.S. Department of Energy, Amarillo Area Office, PLAN-UQA-85, Revision 2 (March 24, 1998).
23. Amarillo Area Office Organization Chart (December 5, 1999)
24. Organization Chart, M&H Corporation Environmental Technologies Department (February 9, 2000)

Contracting

25. ES&H in Contracting:

- 25.1 Acquisition Letter 97-07, Department of Energy (September 26, 1997)
- 25.2 ES&H Contract Clauses/Statement of Work:
Protection of the Worker, the Public and the Environment (May 25, 1999)
- 25.3 Information Paper: Conditional Payment of Fee, Profit or Incentives, DEAR
970.5204-86 (August 24, 1999)
- 25.4 List of DOE Major Contracts
- 25.5 Secretarial ISM Memo: Secretarial Policy Statement of Integrated Safety
Management (October 1, 1998)
- 25.6 DOE Procurement Executive (Hopf) Memo: Contractor Integrated Safety
Management (February 19, 1999)

Permits/Procedures

- 26. RCRA Permit, Number HW-50284 Continuation Sheet 18 of 34 and 25 of 34
- 27. Pantex Plant: MHC Internal Procedure - Data Quality Assurance and Reporting
(August 27, 1997)
- 28. Draft Final Ogallala Impact Contingency Plan, Mason & Hanger Corporation
(June 1999)
- 29. Pantex Plant Conduct of Operations Manual (MNL00040), Revision 5 (January 1999)
- 30. MHC Memo: Standing Order 00-EPERD-01 -- Report on Standing Orders 00-AT-4 and
00-AT-5 (March 20, 2000)
- 31. Pantex Plant: MHC Internal Procedure - Groundwater Sampling (September 24, 1997)
- 32. Final Self-Assessment of the Pantex Groundwater Project, Conducted by Department of
Energy, Grand Junction Project Office, June 9, 10 and 11, 1999

Attachment 2
Organizations and Individuals Comments on the Report

A draft of this report was made available to the public and comments were received from the following individuals and organizations:

Sidney Blankenship, Co-Chair, Pantex Plant Citizen's Advisory Board
Inge Brady, Citizen
Lynn Ebling, Citizen
Don Moniak, Serious Texans Against Nuclear Dumping
Karen Richardson, Chief Counsel, Mason and Hanger

The comments received were, in many cases, broader than the scope of the EH review which was limited to providing the Secretary with an independent review of the adequacy of the Pantex site-wide ground water monitoring and reporting system and to determine if procedures were adequately followed after the discovery of contamination in the Ogallala aquifer.

Those comments that were within the scope of the review were considered and addressed in the final EH report, as appropriate. These comments are summarized below. In addition, EH has provided to DOE Program Offices responsible for Pantex activities copies of the incoming letters to alert them of the issues raised that were beyond the scope of the EH review.

1. Pantex has poor credibility. The public doesn't trust DOE or Mason & Hanger to be honest and open, to share information, and to be accountable.

EH acknowledges that this is a problem.

2. Pantex must minimize drilling to reduce the chances of creating preferential pathways.

EH agrees with the comment and has made this point in the report.

3. Pantex needs a well-documented and well-written ground water management action plan, which includes better characterization of the ground water system, including the vadose zone, and systematic monitoring and reporting to management and the public.

EH agrees with the comment and has recommended it to be developed pursuant to Order DOE 5400.1.

4. Pantex should address ground water as an integrated site-wide program that cuts across other programs and organizations. Roles and responsibilities for the ground water program, across

contractor and DOE organizations, need to be clarified. Specifically, Defense Program's landlord functions and the Environmental Management cleanup functions should be properly coordinated. Top management should implement the program beginning with a policy statement committing to protecting and cleaning up the Ogallala aquifer. Line management accountability for ground water protection needs to be strengthened. Procedures for monitoring and reporting need to be included in the plant's safety management system.

EH agrees with the comment and has made recommendations that would ensure integration of ground water protection into all site-wide operations..

5. DOE, EPA, TNRCC need to continue their collaboration on ground water monitoring.

EH agrees with the comment.

6. The public needs to be assured that their drinking water is safe. Collaboration with the Panhandle Groundwater Conservation District should be considered as a mechanism.

EH agrees that Pantex needs to implement programs to ensure safety, and these programs need to be open and coordinated with the public. EH believes Pantex should take the lead to identify and implement the programs aimed at meeting this goal.

7. Pantex needs to explore the implementation of innovative monitoring and characterization techniques.

EH agrees with the comment , but has deferred specific technical recommendations to the EM Team report.

8. Pantex is not proactive in meeting environmental goals and is not forthcoming with information, causing the public to expend extra effort to get the information.

EH believes that Pantex needs to: a) provide more opportunities for citizens to interact with DOE on ground water issues, e.g., using a web site as a communicational tool; b) be more proactive in sharing information with the public, and c) strive for excellence in ES&H in addition to complying with laws and DOE requirements. EH has recommended the use of an internet-based Geographic Information System to facilitate communication with the public.

9. There is a routine lack of confirmation testing following the detection of contamination, inconsistent and insufficient use of detection limits; and, inappropriate use of maximum contamination limits that includes inflated background levels.

EH recommends enhanced and systematic monitoring that addresses site-wide ground

water management and data quality objectives established by DOE.

10. Ground water personnel turnover has been high and existing staff need to strengthen their technical skills and knowledge.

EH agrees with the comment and recommends that Pantex implement a rigorous training program so all personnel are aware of basic ES&H requirements and training needs. Pantex should also clearly specify ES&H standards and what the standards are for the toxic substances at the plant. EH believes that retaining and hiring experienced and qualified personnel should be a priority for Pantex and should be part of the recommended policy statement or directive committing to protecting the Ogallala aquifer.